MECHELECIV

THE GEORGE WASHINGTON UNIVERSITY
SCHOOL OF ENGINEERING

In This Issue

- A GROWING UNIVERSITY
- A.S.C.E. STUDENT CONFERENCE
- PHOTOELASTIC METHOD OF STRESS ANALYSIS
- ENGINEER'S BANQUET

May 1948

Attend the

20th ANNUAL

ENGINEER'S BANQUET

of the

George Washington School of Engineering

Hotel Burlington

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(Vermont Avenue at Thomas Circle)

SATURDAY, MAY 8, 1947 6 P. M.

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MECHELECIV

Published by the Engineers Student Council
The George Washington University

VOL. 7 | MAY, 1948 | NUMBER 5

A GROWING UNIVERSITY

by FREDERICK M. FEIKER
Dean of Engineering

EVIDENCES of growth in our University are many. Latest is the opening of the splendid teaching hospital that has been added to the facilities of the School of Medicine in service to the community. We may all take pride in this further evidence of accomplishment of the plan for the Greater University envisioned by President Marvin. Another striking example is the growth of University spirit. The successful Colonial entertainment series—drama, dance and music—playing to packed audiences of students and faculty in Lisner Auditorium, would immensely please the pioneers of the past in these fields who played to the few in rented halls. We take pride as a School of Engineering in these accomplishments of our sister colleges and faculties and offer them our congratulations.

A few days ago Dr. Van Evera and I, meeting with a committee on Fellowship of the National Research Council, of which he is the secretary, were pleased by another evidence. The Chairman of the Committee, representing a west coast institution recognized for leadership in scientific and engineering research, stated that in accepting candidates for post graduate degrees his institution compared all students' undergraduate grades with their own standards of scholarship and added or subtracted a weighted percentage. George Washington University graduates are graded-up by this standard!

In the new booklet on the present facilities and future plans of the University, commemorating twenty years, the need of a new physical plant for our School of Engineering is listed along with mention of Mr. Charles H. Tompkins' generous nest-egg for a new engineering building. Hasten the day! Meanwhile, in student standing and personnel, in faculty leadership, in school spirit and in successful alumni, we have evidences of deep foundations for growth on which we may build our School of Engineering with assurance and faith.

LEADERS . . .

GRATIFYING to the editors of Mecheleciv is the fact that engineering students do, somehow, find time for student activities of the university. Our congratulations go to Harry Raker and Frank Cullen, who were recently elected to the Alpha Delta Circle of Omicron Delta Kappa here at the university. ODK is a national honorary leadership society for men. A very limited number of students are eligible for election, since the principal requirement is leadership in extra-curricular activities.

Mr. Raker, a civil engineering student and a member of Theta Tau, was elected to membership in ODK due to the fact that he is a member of Sigma Tau and for his active service as Business Manager of Cue and Curtain, the dramatic group of the university which is now known as the University Players. Mr. Raker has also been active in the Hillel Foundation for the last two years.

Mr. Cullen, last year's Mecheleciv editor, has attended two other universities. He was a member of the board of editors of the Florida University "Alligator" and president of that school's freshman engineering class. At Texas Christian University he was an officer of the Students Christian Association, the most active organization on that campus. Here at George Washington Mr. Cullen was a member of the Engineers Council, Assistant Editor of the University Handbook, member of the Hatchet Staff, and member of Theta Tau. He is a student in the combined Engineering and Law curriculum.

Fremont Jewell, retiring president of the Student Council of the University, is the only other engineering student who is a member of ODK. Mr. Jewell was elected last fall. Dean Feiker and Professor Ames are honorary members.

Sigma Tau

Recently the Xi Chapter of Sigma Tau, the honorary engineering fraternity, pledged twenty six new members. These men were initiated at the spring initiation on April 17th, which was highlighted by the Chapter Installation Day Banquet. The new members are: George Pynn, John Glessner, John B. Allen, Harry McNaughton, Benjamin Cruickshanks, Jr., Byron Mizell, Saul Schack, Hillis McGee, Burr Latta, Alexander Levin, Albrecht P. Barsis, Norris C. Hekimian, Merrit Downing, Justin C. Schaffert, Wallace G. Kistler, Jr., Frank C. Braugh, Robert C. Koche, Edgar D. Morgan, James K. Haskell, Charles K. Mann, Walter P. Cannon, Graham Schofield, Lawrence E. Brown, Norman Czajkowski, Elmer G. Sunday, Jr., and Richard A. Eldridge. Professor Otakar Kabelac was made an honorary member.

Elected as officers of the Chapter for the coming year were: President—Irving Lilijegren, Vice President—Robert Manville, Corresponding Secretary—Woodrow Mullins, Treasurer—Robert Kautz, Recording Secretary—James Sinsabaugh, Historian—William Heiser, and Engineers' Council Representative—Birch Eakin.

Maryland - District of Columbia Student Conference of A.S.C.E.

Place: George Washington University

Time: Saturday, April 24, 1948

TENTATIVE

CONFERENCE PROGRAM

—Morning—

10:00—Registration.

10:30—Introductory talk by Mr. Chandler, Eastern Representative of ASCE, followed by an open discussion.

11:30—Technical movie, Inspection Group "A."

—Afternoon—

Inspection Group "A"

12:00—Lunch at the Faculty Club.

12:45—Inspection trip "A" to the Blue Plains Sewage Disposal Plant and the National Bureau of Standards.

Inspection Group "B"

12:00—Technical movie.

12:30—Lunch at the Faculty Club.

1:15—Inspection trip "B" to the Naval Ordnance Laboratory at White Oaks, Md.

—Evening—

6:00—Banquet at Highlands Apartment, California Street and Conn. Ave.
Guest Speaker: Mr. Don Reynolds, Asst. Treasurer of ASCE.

At the head of the Student Conference Committee is Charles Appel, and his associate committee members are Fremont Jewell and Dick Shaw who secured the services of the two speakers, Ervin Liljegren who obtained the technical movies, Will Heiser who arranged for the field trips, and Robert Schwab who handled the publicity end. Professor Walther, the Faculty Advisor of the Chapter, carried his full share of the work in his capable assistance to the committee. The speakers scheduled for the morning meeting and for the banquet will talk on subjects of interest to every engineer. Mr. Chandler, speaking in the morning, has for his topic, "Advantages of the ASCE." At the banquet you will hear the speech by Mr. Don Reynolds entitled, "Opportunities in Engineering."

History of the Conference

MD.-D.C. STUDENT CHAPTERS, ASCE

by H. A. Balmer

What were you doing thirteen years ago? That was when Dean Lapham guided the Engineering School, before the arrival of the Lisner Library and its brood, Buildings C and D, before Strong Hall, before the School of Government Building, and before the Lisner Auditorium. It was so long ago that, even here at G.W. where night students stay for years to earn a degree, our Chapter has no members who were active in 1935. That was the year when the Conference of Maryland-District of Columbia Student Chapters of the ASCE was born.

The Conference began when William O. Comella, Chapter Secretary at Johns Hopkins, wrote our chapter a letter asking if we would care to join them in a "joint meeting or field day" of chapters in the Delaware, Maryland, West Virginia, and District of Columbia area. Our Chapter was enthusiastic, suggesting that the boundaries be extended a bit to include the State of Virginia. By the following May, hard-working students from Johns Hopkins, Maryland, Catholic U. and G.W. had organized the Conference under a constitution and successfully put over the first annual meeting. After several months of correspondence and a healthy exchange of ideas, particularly with the University of Virginia, V.P.I., and V.M.I., our pioneering alumni learned that small conferences benefit more students than extensive interstate conventions. Accordingly, our association was established between four schools, located near enough to each other to keep travel time within an hour or so. Until the war interfered, the Conference operated very enjoyably for five years, during which five conclaves were conducted.

The George Washington Chapter was asked to act as host at the first meeting, which was held on May 7, 1936. The Johns Hopkins Chapter drafted the Conference Constitution. Delegates from all four chapters served on the Conference Committee which pioneered the field of scheduling programs for the meetings. The infant group was fortunate in having as guests, Dr. D. W. Mead and Mr. George T. Seabury, National President and Executive Secretary of the ASCE. Among Washington Local Section leaders, Colonel Donald H. Sawyer, who later became National President of ASCE and Mr. George O. Sanford helped generously in planning the affair and took part in the program of the meeting. The new Constitution was ratified in the morning session. Motion pictures were shown in both morning and evening sessions. Field trips included the Federal Warehouse, a choice between the Navy Yard and construction projects at the Blue Plains Sewage Treatment Plant, the Supreme Court Building, the Folger Library, and the Archives Building.

The ASCE's went to Baltimore for the second conclave, on April 29, 1937. Dr. Ernest Cloos, of the Johns Hopkins University, spoke on geophysics at the morning session. The boys from the Capital City learned what's what about an industrial city during the field trips to GMC's automotive assembly plant and to Bethlehem Steel's mill at Sparrows Point. The students also viewed the 29th Street Bridge, a concrete monolithic arch structure under construction. Dr. Abel Wolman's address on "The Social Aspect of Engineering," and a motion picture of the Bureau of Reclamation's Columbia Basin Project, shown by Mr. Wesley R. Nelson, highlighted the evening dinner session.

For the third meeting, on April 29, 1938, we enjoyed gracious hospitality from the Maryland Chapter at College Park. Major General J. L. Schley, who was then Chief of Engineers, U. S. Army, gave an address during the morning session. Field trips were cleverly arranged so that the Baltimore boys could see the draw span mechanism of the Memorial Bridge and the Bureau of Standards Laboratories, while the Washington members were offered a trip through the Robert B. Morse Filter Plant at Burnt Mills and the sewage treatment plant at Greenbelt. After the evening banquet at Lord Calvert Inn, visiting guests were invited to the Maryland Engineers Ball at the ROTC Armory on the campus. Yes, the hosts even arranged dates for those who desired same.

The fourth meeting at Catholic U. on May 4 and 5, 1939 was the first conclave scheduled to last more than one day. During the afternoon of the first day, alumni from each of the four schools gave a synopsis of their professional experiences since graduation. The resulting discussion was lively for the students appreciated hearing intimate details of what was soon to happen to them. Senator Murray of Montana addressed the group after the evening banquet. Mr. Harvey Sargent, U. S. Geological Survey, gave an illustrated lecture on topographic mapping on the morning of the second day, after which the group inspected the university's unusual campus. Inspection trips in the afternoon included construction projects at the David Taylor Model Basin and the Washington National Airport.

Back home again, the fifth meeting was held on April 26, 1940. G.W. had grown. Morning sessions of the conference were held in the new Building D. Perhaps as an omen of the future need for American Destruction Engineers, the highlight of the morning session was a film on the planned dynamiting of the Boulevard Apartments. Those who were impressed with the film visited the building site in the afternoon where a Newmann caisson borer was in operation on the foundations of the building. Other field trips included the Taylor Model Basin at Carderock and the Washington National Airport. Mr. Merle Thorpe, Editor of "Nation's Business," gave an address on the business outlook to climax the evening dinner banquet.

No doubt many changes have occurred at all of the member universities during the interim since the last annual meeting. As we welcome the visiting students for the third time, let us hope that there will be no future interferences to our friendly associations and enjoyable annual meetings.

ASCE

The April meeting of the ASCE opened with a short business resume which was followed by the annual competition of student papers. The graduate award was won by Harry Raker, who spoke on "Engineering Security." One of the most interesting points of his speech was the fact that engineers with superior personality could expect $1000 more a year than the average, while those engineers with superior intelligence would expect only $150 more. George Titrington won the undergraduate award with a deserving paper entitled, "The Golden Gate Bridge," which explained the building of this huge suspension bridge and how its design has been a guide for other bridges. The other speakers were: Harry Balmer—"Triaxial Testing Machines," Fremont Jewell—"Silting of Reservoirs," David Colony—"Expected Expansion in Airport Construction," and Claude Dimmette—"Diversion Tunnels at Boulder Dam." All of these speeches were most enlightening and interesting, and Professor Walther stated that he was not the least bit envious of the judges, Professor Eyman, Professor Greenshields, and Professor Liggette, in having to decide on the winners.

AIEE

Winner of the 1948 prize paper contest was W. J. J. Klein who spoke on, "Wave Shaping Circuits and Their Use." The prize is a trip to Columbus, Ohio, to present the paper at the AIEE District Student competition on May 14, plus ten dollars.

At the April meeting, which was a joint meeting with the Washington section and the local student branches held at Bliss Electrical School, Mr. E. W. Beggs, head of the Vapor Lamps Section of Westinghouse, spoke on, "What's New in Vapor and Fluorescent Lamps."

The May meeting will feature election of officers.

ASME

On April 7, ASME and AIEE had a joint meeting. A discussion on engineering curricula was led by Professor Akers.

The regional student convention at LeHigh on April 17 and 18 was well attended.

Officers will be elected at the May meeting, just in time to preside at the ASME Stag after the Engineers' Banquet.

Photoelastic Method of Stress Analysis by Donald D. Blanchard

In the field of structural engineering and in those other branches of engineering concerned with design and analysis of highly indeterminate structures or members of irregular shapes or unusual design, the use of models has become an extremely important tool.

This field is as important to the Mechanical engineer as to the Civil engineer, since in these days of increasing operating speeds and closer tolerances the machine designer finds it progressively more important to secure knowledge of actual conditions of stress and of stress concentration. The most practical method for obtaining the necessary information at the present time is by a photoelastic study of models of the prototype structure.

An understanding of the method requires the knowledge of a few principles and phenomena of physical optics. As is well known, a great number of transparent isotropic substances such as glass, fused quartz, celluloid, and transparent bakelite have the property of becoming birefringent or doubly refracting when stressed. That is, a ray of light passing through these substances when they are in a state of stress is divided into two rays which are deviated by different amounts. Moreover, one ray will be deviated even when the incident ray is normal to the surface of the crystal. The undeviated ray in this latter case follows the law of refraction and is called the *ordinary* ray. The other ray which does not follow the law of refraction is termed the *extra-ordinary* ray. These two rays are components of original ray travelling with different velocities in the substance and whose vibrations take place in mutually perpendicular planes.

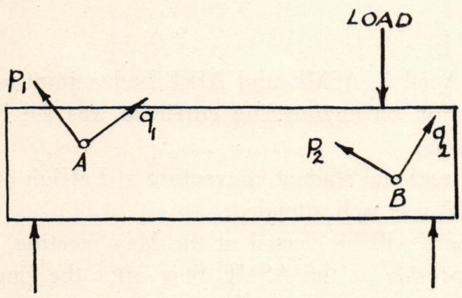

Fig. 1 — Direction of principal stresses at two points in a loaded model of a beam.

If we consider the stresses about a point in stressed medium and draw the vectors representing these stresses in every direction the envelope of these stresses will be an ellipsoid. Photoelastic analysis is most easily done when confined to just one plane of stress. Under these conditions the ellipsoid degenerates to an ellipse. The axes of this ellipse are the directions of the principal stresses, designated p and q. The planes to which each of these are perpendicular are the so-called principal planes upon which no shearing stress exists.

When an isotropic model is subjected to plane stress, therefore, each element in the body has acting on it two principal stresses, p and q, at right angles to each other. It so happens that these directions of principal stress at any point determine the two planes into which the beam of incident light becomes polarized when birefringence takes place.

If, in the above figure, a beam of polarized light strikes each point perpendicular to the plane of the paper it will be broken down at each point into two component polarized rays. The planes of vibration will have the directions of the principal stresses at that point.

In most substances the ray vibrating in the plane parallel to the direction of the compressive stress travels more rapidly than the ray vibrating in the direction of the tensile stress. Therefore the stress medium sets up at every point a phase difference or retardation between the two rays. The speed of a ray along either of the two planes depends upon the coresponding principal stress and therefore the phase difference set up is a direct function of the difference between the principal stresses at the point under consideration. Since this difference may vary from point to point in a specimen, it follows that the phase differences set up varies in the same way across a material, from O to some multiple of a whole wave length. This relationship between retardation and principal stress difference is expressed by an empirical law known as the stress-optic law, which is:

$$R = C(p - q)t$$

In which R is the retardation in wave lengths, C is an optical constant of the material which may be determined experimentally for a particular orientation of any material, and t is the thickness. The retardation as given above between the two component rays therefore gives us the necessary condition for intefrference to take place.

To apply this to the study of stress distributions in an engineering structure a model of the member is first made out of one of the above materials, usually bakelite. This model and its loading system must be designed so that the dimensions of the material and loads bear certain definite relations to the actual structure. This relationship is determined either mathematically or through the use of dimensional analysis. The model is then placed in the polariscope.

The functions of the various parts of this instrument will be explained as we go along.

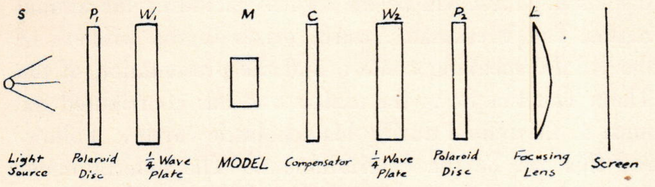

Fig. 2 — Schematic diagram of M.I.T. Polariscope.

The first operation is to determine the directions of principal stress, which is done by placing the model between crossed (axes of the discs oriented at 90 degrees from each other) polaroid discs. Whever the stress directions are parallel or perpendicular to the plane of polarization the field is dark. The image on the screen will therefore be traversed by dark lines called *isoclinics* along which the directions of principal stress have a certain constant inclination. If the polaroid discs are both rotated through the same known angle new isoclinics appear and by continuing this process a map of isoclinics may be drawn, where each one represents the locus of points for which the directions of principal stress are constant.

The portion of the field outside the isoclinics are, in the case of white light, colored. If the directions of the principal stresses in the specimen make some other angle than zero or 90 degrees with the plane of polarization a certain amount of light will be restored through the analyzing polaroid discs (P2) and the color of the field due to this restored light will depend on the stress difference (P — q) at any particular point from the stress-optic law. Every band of constant color, which is termed an *isochromatic,* is the locus of points for which the value (P — q) is the same. The second step in making a photoelastic analysis is therefore to determine the isochromatics and plot them. The value of C(p — q) for each of these lines can then be determined by the use of a Babinet compensator or similar device. This device is graduated to read the value of the desired quantity directly. It operates, when placed in the beam of light and adjusted, to produce a retardation equal in magnitude but opposite in sign to that produced by the specimen thus darkening the selected part of the colored field. The reading it gives when the field is completely dark again at the point selected is the value of C(p — q).

In elementary strength of materials it is shown that the maximum value of the shear stress on a plane perpendicular to the plane determined by the principal stresses p and q, is equal to (p — q)/2. It is therefore obvious that the isochromatic lines may also be considered as being contours of equal maximum shear. This, then, together with the fact that at free boundaries there is only one principal stress and its direction is tangent to the boundary, enables us to determine the relation between the stresses obtained in the model to those that will exist in the prototype.

The use of quarter-wave plates as shown in the sketch of the M.I.T. polariscope eliminates some of the difficulties experienced with the plane polarized light by utilizing circularly polarized light when viewing the stress pattern or isochromatic lines. These plates when placed with their axes perpendicular to one another eliminate the isoclinic lines which would otherwise appear.

The importance of the photoelastic method lies in its ability to analyze the stresses within a specimen that is too complicated to treat any other way. In this manner the stresses in many engineering structures, such as eye bolts, gear wheels, ship's propellers, notched beams and columns, areas around rivet holes, and many other highly indeterminate problems have been studied by the photoelastic method. Even when a theoretical solution exists it will be in many cases much more rapid to use this method.

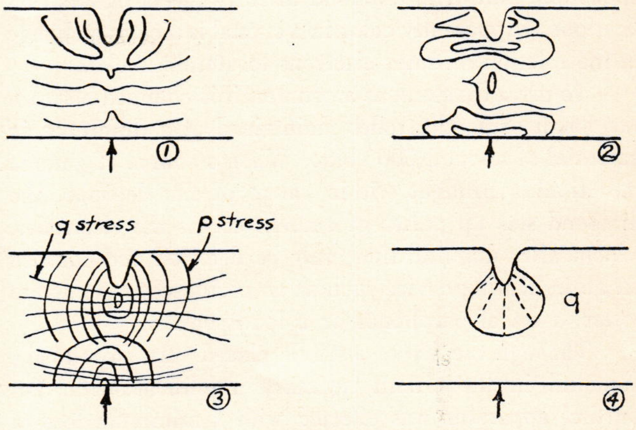

Fig 3 — Mapping diagrams for notched beam supported at notch, loaded at ends.

Finally, it might be of interest to illustrate the various mapping diagrams as they would appear for a notched beam supported at the notch and loaded on the ends. In Fig. 3, the isoclinics are shown in 1., the isochromatics in 2., the directions are shown in 3. of the p and q stresses by curves to which the stresses are everywhere tangent, and the tangential stress along the boundary of the notch is shown in 4., the stress being tension and indicated by the length of a vector normal to the boundary at any given point and extending to the curve.

(Bibliography on page 7)

A New Radiation Detector

by James LeCroy

Because of an intense shortage of equipment such as Geiger-Muller counters to detect extremely minute quantities of radio active material, atomic scientists have been seriously hindered from carrying out critical research.

The National Bureau of Standards recently reported that through studies conducted by Dr. L. F. Curtiss, a solution to the scientists' problem was found by using a new type detector which employs a diamond as its fundamental element. They found that the use of diamonds in this work often is even more satisfactory than the Geiger-Muller counters.

Dr. Curtiss found that a diamond placed in a strong electric field is highly sensitive to gamma rays and institutes sharp electrical pulses when the rays are absorbed. and, in much the same way as a Geiger counter, a count of pulses gives an indication of the intensity of the radiation.

Though the diamond counter has not yet been tested for beta radiation, it is expected that a similar effect may be observed.

The requirements for the diamonds used are that they must be colorless and absolutely free of flaws. Only about one industrial diamond in forty meets these specifications. Apparently color in a crystal indicates a change in the relation of outer electrons to atomic nuclei.

To use a diamond as a counter, it is clamped between two small brass electrodes maintained at a difference in potential of about 1,000 volts. When a source of gamma radiation is brought within range of the detector, the diamond sets up pulses of current across the electrodes, which, after amplification, may be detected and counted on an indicating device such as an oscilloscope, a current meter, a set of earphones or a loudspeaker.

Through the use of a triode placed very close to the diamond in the circuit, primary amplification in Dr. Curtiss' apparatus was effected with a minimum loss of original intensity. The output from this tube was then applied to a two-stage amplifier, from which pulses of sufficient magnitude were obtained to operate the detecting instrument.

The pulse-producing property of the diamond is believed to be a result of its highly symmetric structure, characterized by a very regular arrangement of carbon atoms with relatively large intervening spaces.

Dr. Curtiss reported that adequate sensitivity was obtained with comparatively small diamonds, although it is believed that gamma-ray sensitivity of a diamond counter is proportional to the size of the crystal.

The diamond, capable of indicating a much greater number of pulsations per minute than is possible with the ordinary Geiger-Muller counter, is the only material so far investigated that performs satisfactorily at room temperature. Diamonds tested in the bureaus laboratories have been found to have a sensitivity per unit volume equal to or greater than that of any counter constructed by man. While the Geiger counter lasts from three months to two years depending on its use, the diamond counter, which cost almost the same, is believed to be virtually indestructible.

One of the diamond counter's most important features is that it is so small. Because of its size it can be used inside the human body or in small openings in industrial equipment. In this connection, it becomes of extreme importance in tracing radioisotopes—the radio active particles now being developed for world-wide consumption from the chain-reacting uranium pile at Oak Ridge, Tennessee.

The radioisotopes, which differ from the regular elements only in their atomic weights and power of radio activity, have been described in some science circles as the most important development since the invention of the microscope, and herein the discovery of the diamond counter is most important in that the finer the detector, the greater the degree of accuracy which can be obtained in these atomic age experiments.

ENGINEER'S BANQUET

The general program for the banquet is still a little hazy, but we offer you what information has as yet been disclosed. First will be the awards including the annual Sigma Tau Freshman Award, prizes to the winners of the ASME speaking contest, and the presentation of the Theta Tau Plaque to the senior who has contributed the most to the school during his scholastic career. Following this wil be the entertainment. The entertainment committee, consisting of Dick Shaw, Harold Thomasson, and Dwin Craig, announces that possibly steps will be taken to relieve the monotony of eating by providing the professors with the (invaluable) opportunity of seeing themselves through the eyes of their students. As a matter of safety such presentation will be made by students about to graduate, the names of whom are being withheld until the more important quizzes are over. No further information is forthcoming from behind the Ferrous Curtain thrown up by the Entertainment Committee. The finale of the program will be a speech for which Dean Feiker has been trying to obtain Senator Flanders. Due to the unsettled situation of the times, this was not definite at the time Mecheleciv went to press.

Post Banquet Party

To make the evening complete the George Washington Chapter of ASME has graciously invited all and everyone to a party, following the banquet, at the Odd Fellows Temple, 419 Seventh St., N.W. A negligible fee of one dollar is the entrance requirement, and inside will be refreshments and card playing. This is the third annual ASME stag party.

Alumnews by EMANUEL BECK

Michael T. Murray—

Mr. Murray is a sales promotion engineer and southwestern representative of John J. Nesbitt Inc. He is in Dallas, Texas. Mr. Murray received the B.S. in M.E. in 1945.

Lewis D. Asmus—

Mr. Asmus was recently promoted to the position of District Design Engineer on the staff of the District Engineer, Public Roads Administration, with headquarters at Jefferson City, Missouri. He received the B.S. in C.E. in 1922.

Louis A. Gebhard—

B.S. in E.E. in 1930, Mr. Gebhard is in charge of Radio Division II, one of the nine major divisions of the Naval Research Laboratory in Washington, D. C.

S. L. Seaton—

A former student of G.W.U. Mr. Seaton was recently appointed Director of the Geophysical Observatory at the University of Alaska. He was previously associated with the Carnegie Institution of Washington. He is the author of some sixty monograms and two books.

A. Arnold Brand—

Mr. Brand was elected one of the three vice-presidents of the United States Naval Academy Alumni Association. He represents the central states area and lives in Chicago, Illinois. He received the B.S. in E.E. in 1916.

Stuart C. Gee—

B.S. in E.E. in 1936, Mr. Gee is now manager for the Caracas district of International General Electric of South America Inc. His headquarters are in Caracas, Venezuela.

Ernest J. Parkin—

Mr. Parkin was formerly a member of the staff of the United States Coast and Geodetic Survey in Washington, D. C. He has been named assistant professor in civil engineering at Ohio State University in Columbus, Ohio. Professor Parkin served as a Navy Lieutenant for 17 months in the Pacific theater aboard an escort carrier and with Admiral Nimitz's staff at Advanced Headquarters at Guam. He received a B.S. in 1933.

Charles B. Hawley, Jr.—

B.S. in M.E. in 1943, Mr. Hawley is construction and repair engineer for the Dupont Corporation at Grasselli Chemicals Department of New Jersey. He lives in North Plainfield, New Jersey.

(Continued from page 5)

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Engineering Through the Eyes of Seniors by Thomas Mutchler

In a recent assignment in mechanical engineering proseminar the seniors were given the chance of a life-time to get their pet "gripes" concerning engineering education off their chests. This golden opportunity was in the form of a theme devoted partially to discussing the factors that led to the choice of their profession and further to expressing their opinions of present engineering curriculum. Although there were numerous reasons given for deciding to follow their future occupation, most of the students were in general agrement upon the faulty points of engineering study.

Almost unanimously, the greatest shortcomings of the course of study which the men have been pursuing were listed as the back-breaking number of credit hours which must be carried each term and the failure to include more liberal arts courses in the curriculum. The remedy generally put forth for these major problems was essentially that discussed in an article entitled, "A New Approach to Engineering Education," presented in the December issue of the "Mecheleciv." This is that the course of study be lengthened to five or even six years, the first two of which to be pre-engineering, and the last four to include the actual engineering courses.

The engineer today is not held socially in as high esteem as many other professional men, this being primarily a result of being "holed in" in college with an overburden of work and a lack of general arts knowledge. The general opinion of the seniors seems to be that with the two year pre-engineering course including, along with basic science and mathematics, such subjects as speech, literature, political science, psychology and other liberal arts courses, the caliber of engineers would be raised, and the professional engineer would become more valuable to, and more highly respected in the community. One senior, Arthur C. Brown, summed up the opinion of many when he wrote, "Too much specialized training tends to narrow one's interest in others' fields; this is partially responsible for the segregation of interests and professions—a segregation which is far more real than necessary. A better understanding of the other fellows' problems will bring the engineer out of his shell, not only in society but on campus as well, and will give him a better understanding of the place and value of engineering to civilization."

The brightest aspect of the present engineering course of study seemed to appear to the seniors as they progressed through their last year of schooling. The majority described how bewildered they felt on approaching graduation year. Many wondered if they were supposed to feel like engineers since they seemed to know very little engineering in all. However, almost all agreed, that as they draw near that long-sought day, many of the clouds are lifted away, and their hard-earned knowledge ties itself together through the medium of the senior courses, something indeed for all approaching their senior year to look forward to.

German spotters could locate planes 12 miles away with uncanny accuracy toward the close of World War II. Detection was effected through reaction of infra-red rays to heat of engine exhaust. Wright Field engineers say the device used proves Germany was further advanced than any other nation in knowledge and use of the invisible ray. Another illustration—the German gadget which corresponded to the American "sniperscope" had a range of 328 yards, or more than five times that of the American device.

HEY-*Don't Throw it away Yet!*

Before you dispose of this copy of Mecheleciv, the editors would like your oinion. This is the last issue for this school year. When we resume in the fall we want to put out a magazine the students like to read. What do YOU want in Mecheleciv?

1. ***Long articles or short articles?***
2. ***Technical writing or human interest?***
3. ***Cartoons and photographs or line drawings?***
4. ***Large page size or small page size?***
5. ***Printed or offset lithographed?***
6. ***What else?***

Come and see us, join the staff, or drop us a note. Second floor, rear, of Bldg. N, 718 21st St., N.W.

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